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**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

IN RE APPLICATION OF :  
ULRIKE LICHT, ET AL. : EXAMINER: NILAND, P.  
SERIAL NO: 10/553,037 :  
FILED: OCTOBER 11, 2005 : GROUP ART UNIT: 1796  
FOR: SELF-EMULSIFYING AQUEOUS :  
POLYURETHANE DISPERSIONS

**REPLY BRIEF**

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

This is in reply to the Examiner's Answer dated September 28, 2009.

The Examiner has adhered to the following grounds of rejections:

(A) Claims 8, 9, 21-38 and 40-56 stand rejected as under 35 U.S.C. § 112, 1<sup>st</sup> paragraph as failing to comply with the written description requirement.

(B) Claims 8, 9, 21-38 and 40-56 stand rejected as being obvious under 35 U.S.C. §103 (a) over Licht et al (WO 02/064657 as translated by US 2004/0077777 A1) in view of Jakubowski et al (US 5,959,027) and Scriven et al (US 4,046,729).

These rejections are untenable and should not be sustained.

Ground (A): The subject matter of the claims was described in the original specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors were in possession in of the claimed invention at the time the application was filed.

Contrary to the Examiners' statement at the paragraph bridging pages 11 and 12 of the Examiner's Answer, the molecular weight of the polyethylene glycol is a number average as

supported, for example at page 16, line 6, of the specification which refers to the measurement of the OH number according to DIN 53240.

DIN 53240 describes the determination of the OH number. A translation of DIN 53240 was filed on March 13, 2008. The OH-number is always unambiguously connected with exactly one (average) molecular weight of a sample, see topic #9 of the English translation of DIN 53240. The OH-number means how much potassium hydroxide is consumed on neutralization of an OH group containing sample and is usually given in mg KOH per g sample. The following is an exemplary calculation. Since 1 mol KOH has a molecular weight of 56.1 g/mol, an OH-number of 100 means a consumption of  $100 \text{ mg KOH/g} = 1.8 \text{ mmol KOH/g}$ . This means that 1 g of the sample contains 1.8 mmol OH-groups. Thus, for a diol (two OH functions) the number average molecular weight of the sample is 1111 g/mol. In case the molecular weight of the sample is distributed over a wide range, the OH number refers to number average molecular weight.

The Examiner appears to argue that the number average molecular weight is not based on the OH number. However, this goes against well accepted scientific principles.

Thus, the rejection of Claims 8, 9, 21-38 and 40-56 under 35 U.S.C. § 112, 1<sup>st</sup> paragraph, should be REVERSED.

Ground (B): It is an object of the present invention to provide primary dispersions which comprise polyurethane, which are finely divided without the use of high shear forces, and which make it possible not only for the raw materials to be emulsified finely but also for the products to be dispersed. See page 2, 1<sup>st</sup> full paragraph of the specification.

However, WO 02/064657 (US equivalent 2004/0077777) in view of US 5,959,027 and US 4,046,729 fail to disclose or suggest the process of producing the aqueous primary dispersions as claimed in Claims 8, 27, 54 and 55.

According to US 2004/0077777, paragraph [0014] "incorporation of ionically or non-ionically hydrophilic groups" is **not necessary**. Thus, there is no motivation to combine with other documents disclosing emulsifiers for polyisocyanates in US 2004/0077777 since this reference teaches away from doing so.

Further, US 4046729 discloses "the reaction product of ethylene glycol with a mixture of propylene oxide and ethylene oxide" (col. 8, line 49) as well as salt groups which may be anionic or cationic (col. 11, lines 1 to 36). However, the polyalkylene ether polyol according to US 4046729 contains **2 to 6** alkylene oxide units (col. 8, line 46) while the polyols of the present invention contain more alkylene oxide units than US 4046729, namely **10 to 200**.

US 5,959,027 is silent about mixed polyalkylene oxides.

Thus, even if WO 02/064657 (US equivalent 2004/0077777) and US 5,959,027 and US 4046729 were combined, the present invention does not result.

Further regarding the specific structures of component c), Applicants wish to refer to dependent Claims 43, 44, 50 and 51.

"wherein the component c) is selected from the group consisting of monohydroxycarboxylic acids, monohydroxysulfonic acids, monoaminocarboxylic acids, monoaminosulfonic acids and mixtures thereof"

And

"wherein the component c) is selected from the group consisting of mercaptoacetic acid, mercaptopropionic acid, thiolactic acid, mercaptosuccinic acid, glycine, iminodiacetic acid, sarcosine, alanine,  $\beta$ -alanine, leucine, isoleucine, aminobutyric acid, hydroxyacetic acid, hydroxypivalic acid, lactic acid, hydroxysuccinic acid, hydroxydecanoic acid, dimethylolpropionic acid, dimethylolbutyric acid, ethylenediaminetriacetic acid,

hydroxydodecanoic acid, hydroxyhexadecanoic acid, 12-hydroxystearic acid, aminonaphthalinecarboxylic acid, hydroxyethanesulfonic acid, hydroxypropanesulfonic acid, mercaptoethanesulfonic acid, mercaptopropanesulfonic acid, aminomethanesulfonic acid, taurine, aminopropanesulfonic acid and mixtures thereof.”


Thus, Claims 8, 9, 21-38 and 40-56 are Not obvious over Licht et al (WO 02/064657 as translated by US 2004/0077777 A1) in view of Jakubowski et al (US 5,959,027) and Scriven et al (US 4,046,729) within the meaning of 35 U.S.C. §103(a). For all the above reasons, it is respectfully requested that this rejection be REVERSED.

### **CONCLUSION**

For the above reasons, it is respectfully requested that all the rejections still pending in be REVERSED.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.

  
Kirsten A. Grueneberg, Ph.D.  
Registration No.: 47,297